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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,954	02/27/2002	C. Raymond Cheng	4695-00008	8376

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EXAMINER
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LAWRENCE JR, FRANK M

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/083,954

Applicant(s)

CHENG ET AL.

Examiner

Frank M. Lawrence

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 18-34 is/are rejected.
- 7) ☒ Claim(s) 14-17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 66. For correction, in figure 6, "64" should be changed to "66". A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4-13 and 26-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Presz, Jr. et al. (5,110,560).

4. Presz, Jr. et al. ('560) teach a diffuser for a catalytic exhaust aftertreatment element inside of a walled housing, comprising a tapered convoluted wall extending from the housing inlet toward the catalytic element at an angle of 20° relative to an axis of the housing and defining a transition duct expanding to a larger cross section as the wall extends from the inlet towards the element (see abstract, figures). In an embodiment, the diffuser wall has a downstream end spaced laterally inwardly from the housing wall and axially upstream of the element and

supported by a flange (see figures 21, 26, col. 13, lines 47-57), wherein a projection line drawn along the wall would intersect the outer wall at the element. The ratio of the length of the axial gap to the length of the lateral spacing will be about 1.5 at some points along the wall convolutions. In other embodiments, the wall tapers at a compound angle defined by a first section at a 20° angle relative to the axis and a second section at an angle greater than 30° (see figure 1), or the wall forms a hyperbolic tube in a continuous diverging curve (see figures 5-8). The diffuser uniformly disperses exhaust throughout the catalyst using a relatively short diffusion section, and the catalyst element will function as a filter because of its honeycomb cell size.

5. Claims 1-3, 23-26, 33 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Wagner et al. (5,828,013).

6. Wagner et al. ('013) teach a muffler with a catalytic converter element, comprising a spiral wound catalyst element (see figures 1-3, col. 9, lines 57-64) that would be subject to push-out damage because of its thin walls, within a housing with an upstream acoustic element (5) or a flow distribution arrangement (186). The acoustic element comprises a perforated tube connected to the housing wall using a flange upstream of the catalyst and the flow distributor includes a domed baffle (197) with a convex side towards the inlet and uniform porosity for evenly distributing flow over the catalyst surface (see col. 10, line 65 to col. 11, line 7). The catalyst will function as a filter as discussed in paragraph 4.

7. Claims 1, 2, 18-20, 33 and 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Crocker et al. (2002/0162319 A1).

8. Crocker et al. ('319) teach an exhaust catalyst aftertreatment device comprising a honeycomb catalytic element within a walled housing having an inlet, and an upstream diffuser element including a conically shaped perforated tube at the inlet that converges at an apex pointing towards the catalyst (see figure 6, paragraph 0033).

9. Claims 1, 2, 21, 22, 33 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Steenackers (5,484,575).

10. Steenackers ('575) teaches an exhaust catalyst aftertreatment device comprising a honeycomb catalytic element within a walled housing having an inlet and an upstream diffuser element including a perforated plate between the inlet and element, wherein the central area of the plate has a lower perforation porosity than the surrounding area (see abstract, figures 14, 15, col. 3, lines 47-54, col. 17, line 42 to col. 18, line 7).

***Allowable Subject Matter***

11. Claims 14-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: claim 14 recites "said diffuser comprises a central axially extending cylindrical tube and a plurality of vanes extending radially outwardly from said tube and curved and curved to impart a non-axial flow direction component, wherein a first portion of said exhaust from said inlet flows axially within said tube, and a second portion of said exhaust from said inlet flows along said vanes and is directed by the curving of said vanes along a non-axial flow component direction," which is not taught, disclosed or suggested in a single reference or a combination of references in

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the prior art of record. The closest prior art to Yang et al. ('134) discloses curved vanes extending from a tube for imparting non-axial flow to exhaust upstream of an aftertreatment catalyst but fails to suggest a motivation for using vanes that extend radially outwardly from the tube for splitting the flow into two portions as recited.

*Conclusion*

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional references listed on the attached PTO-892 form disclose flow diffusers for the inlets of exhaust aftertreatment systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank M. Lawrence whose telephone number is 703-305-0585. The examiner can normally be reached on Mon-Thurs 7:30-5:00; alternate Fridays 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 703-308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

Frank Lawrence

*Frank Lawrence*  
Patent Examiner 528-03

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May 28, 2003